

Checklist #3

Stormwater Management Plan

Under county ordinance, additional impervious surfaces in a proposed development may trigger the need for a stormwater management plan to obtain a permit. A stormwater management plan is designed to protect downstream water resources and property owners from water pollution, flooding and other damage caused by urban runoff after a development is complete. This check list shows what information needs to be provided and what issues need to be addressed when preparing a stormwater management plan. All items listed may not be applicable to each site, nor is the list all-inclusive. It is meant to serve as a guide for the stormwater planner. County policy requires a **Preliminary Review Letter** from the Land Resources Division prior to approving a preliminary plat or other large developments. ***NOTE: Underlined items are required for preliminary review letter.** Please refer to checklists #1 and #2, for other items related to general site conditions, the proposed development and plans to minimize soil erosion during the construction phase.

Delineate and Label On Maps (1" equals no more than 100') & Drawings:

- ___ *North arrow, graphic scale, drafting date/version and designation of source documents for all map features;
- ___ *Existing and proposed watershed, subwatershed, and land use boundaries.
(Contributing watersheds that extend beyond the site boundaries may be delineated on a separate map.)
- ___ Delineation of all proposed impervious surfaces, except for single family residences.
- ___ Existing and proposed Tc/Tt flow paths used to calculate pre/post development flows.
- ___ *Proposed stormwater discharge points (water leaves the site by surface or subsurface flows).
- ___ *Type, size, location and cross-section of all proposed stormwater management conveyance systems (grass swale, diversion, lined channel, storm sewer, etc.).
- ___ *Location and type of all proposed stormwater management structures. Detailed drawings, including cross-sections, profiles, and elevations are also required.
(stilling basin, grade stabilization structure, detention basin, filtering/infiltration practices, etc.)
- ___ *Proposed drainage easements and widths (in feet).
- ___ *Location of all soil profile investigations with surface elevations and link to support data.
- ___ *Proposed access lanes and sediment disposal areas for future maintenance of stormwater management facilities.

Provide Supporting Information (summary format – no stacks of computer printouts):

- ___ *Plan narrative describing site drainage, stormwater management objectives, and how the proposed stormwater management plan will meet the objectives and be implemented.
- ___ *Watershed, subwatershed and land use areas (in acres – by watershed, not ownership lines).
- ___ Impervious surface areas (in acres), except for planned single family residences.
- ___ Pre/post development TR-55 runoff curve numbers and Tc/Tt values.
- ___ Pre/post development peak flows for the 2-yr, 10-yr., and 100-yr./24 hour storm events for all proposed stormwater discharge points from the site.
- ___ Support data for all stormwater practice designs, such as inflow/outflow rates, stage/storage data, hydrographs, outlet designs, infiltration rates, water elevations, etc.
- ___ *Soil profile investigation data (color, texture, groundwater/bedrock depth, structure, etc.)
extending at least 3 feet below the planned bottom elevation of any structure/component.
- ___ Runoff volume calculations needed to show compliance with infiltration standards.
- ___ 10-yr./24 hour peak flow calculations for all proposed storm sewers and for cross-culverts and open channels with drainage areas > 20 acres.
- ___ Other hydraulic and hydrologic computations critical to the plan/designs.
- ___ Impact assessment for discharges to wetlands.
- ___ Planting and landscaping plans that are critical to the stormwater designs.

Sample Reviewer Questions: (Yes, No or Not Applicable)

- ___ Is the plan stamped by a professional engineer licensed in Wisconsin?
- ___ Are all plan input parameters clearly stated and all geographic elements used in making the calculations clearly cross-referenced on maps?
- ___ Does the plan maintain natural drainage patterns, infiltration areas (depressions) and watershed boundaries as much as practical?
- ___ Does the plan minimize potential downstream/off-site impacts?
- ___ Is adequate space reserved for stormwater management practices?
- ___ Does the plan comply with the ordinance peak flow control requirements? Will it be adequate to prevent downstream gullies or streambank erosion?
(Standard - check post development against predevelopment 2-yr., 10-yr. and 100-yr/24 hour storms)
- ___ Will the plan protect downstream water resources? Does it utilize a "treatment train" effect of filtering the first ½" of runoff?
(Standard - control 80% total suspended solids of post development runoff)
- ___ Is it coordinated with erosion control efforts? *(combo sediment basin/wet detention)*
- ___ Are impervious surfaces minimized for the proposed land use? Do they drain to vegetated areas for filtering and infiltration where feasible?
- ___ Are native plantings used to encourage good soil structure and maximize infiltration?
- ___ Have adequate soil profile investigations been conducted *(2-3 per stormwater practice)*? Do they support the planned practices *(clay liner for ponds, texture/mottling/bedrock for infiltration)*?
- ___ Will the plan minimize downstream impacts from increased runoff volumes, such as chronic wetness conditions/flooding? Is there a need or opportunity for infiltration?
- ___ Does the plan allow attenuation and filtering of flows in vegetated swales?
- ___ Does the plan minimize hydrologic changes and pollutant loading to wetlands?
- ___ Does the plan recognize mandatory separation distances between wells and detention or infiltration practices? *(100' from residential wells, 1200' from municipal well, wellhead protection?)*
- ___ Do stormwater practice designs comply with adopted technical standards?
- ___ Does the proposed outlet device allow for future drawdown for maintenance?
- ___ Does the plan protect groundwater resources? *(pretreatment before infiltration).*
- ___ For wet detention basins, are the soils and watershed adequate to maintain a permanent pool? Is topsoil specified to be reapplied on the safety shelf?
- ___ Are inflow and outflow channels adequately armored to prevent erosion?
- ___ Is enough plan detail provided for correct installation of practices? *(rock channel cross-sections, profiles, elevations, etc)* Is an engineer assigned oversight of construction?
- ___ Does the plan allow adequate access to stormwater practices for future maintenance?
- ___ How about sediment disposal areas?
- ___ Have other applicable permits been obtained by the applicant?
(Chapter 30 – DNR, NR 216 – DNR, Shoreland & local zoning- County/Town, 404 Wetlands-Army Corp.)

Note: A similar form may be sent to you by the plan reviewer to indicate missing items.